

## Wetlands, Marshes and Swamps

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Two basic types of salt water wetlands occur along the shoreline and islands of Mosquito Lagoon - mangrove forests and salt marshes. Canaveral National Seashore (CANA) is in the transition zone where these two types overlap; mangrove forests dominate to the south, while salt marshes dominate to the north. The overall transition zone between mangrove forests and salt marsh is reported to lie between Sebastian Inlet (near the Indian River/Brevard County line) and Oak Hill in Volusia County. Two excellent places in the park to see smooth cord grass and mangroves growing together are the North District Visitor Center dock and the lagoon shoreline just south of Turtle Mound.

Three types of mangrove trees and one associated species comprise the mangrove communities in CANA. The red mangrove (*Rhizophora mangle*), black mangrove (*Avicennia germinans*), white mangrove (*Laguncularia racemosa*), and buttonwood (*Conocarpus erectus*) have specialized adaptations that enable them to tolerate salt. They do not actually require the presence of salt water for normal growth; however, mangroves are incapable of withstanding competitive pressure from freshwater species and require the salinity to be at least 5–15 ppt. As tropical species, mangroves are sensitive to freezes and low temperatures and died back during cold weather events that periodically occur in CANA. Freezes lasting at least 24 hours in the 1980's killed all above-ground portions of mangroves north of Haulover Canal. Within a few years though, dense growths of seedlings will appear beneath the dead mangrove snags to begin a new growth cycle.

Mangrove communities provide valuable habitat for a myriad of animal life, including fish, birds, amphibians, reptiles, invertebrates and mammals. Many of these species are listed as endangered, threatened or species of special concern. Due to their importance, mangroves are protected by Florida law and mangrove communities cannot be altered. Red mangroves are also being planted in the park to reduce erosion along the shoreline of the Lagoon, such as at the base of Turtle Mound.

Salt marsh communities consist of non-woody salt tolerant plants occupying intertidal areas that are periodically flooded. This community type exhibits one of the highest net primary productivity levels of any ecosystem on earth. There are two primary types of salt marsh at CANA- low marsh and high marsh. The former is below mean high tide while the latter is flooded periodically by wind blown tides or seasonal rises in sea level. The low marsh area is often dominated by dense stands of smooth cordgrass (*Spartina alterniflora*), acting as a border between the water and high marsh. While there are vast expanses of smooth cordgrass through coastal Georgia and north Florida, at CANA it is often limited to a mere fringe along the water only a few feet wide. High marsh zones are characterized by any of the following plants: black needlerush (*Juncus roemerianus*), glasswort (*Salicornia* spp.), saltwort (*Batis maritima*), salt grass (*Distichlis spicata*), sea oxeye daisy (*Borrchia frutescens*), and salt marsh jointgrass (*Paspalum vaginatum*). An important feature of the salt marsh is the intimate relationship that exists between it and the adjacent waters of the lagoon. Energy fixed in the marsh is flushed out by the tide in the form of organic matter or detritus. Detritus forms the primary food for many

animals in the estuary. Hence, salt marshes play a vital role in fisheries production.

Many terrestrial and semi-aquatic animals visit the salt marsh to forage.

Mammals include the round-tailed muskrat (*Neofiber alleni*), raccoon (*Procyon lotor*), marsh rabbit (*Sylvilagus palustris*), marsh rice rat (*Oryzomys palustris*), cotton rat (*Sigmodon hispidus*) and cotton mouse (*Peromyscus gossipinus*). A number of wading birds utilize the marsh as well. A reptile, one of CANA's federally protected species, is the poorly understood Atlantic salt marsh snake (*Nerodia clarkii taeniata*). It lives on the high marsh islands in the northern end of Mosquito Lagoon. Almost the entire range of the snake occurs within a single county (Volusia). It is threatened by inbreeding with the Florida banded water snake (*Nerodia fasciata*).

An important invertebrate resident of the salt marsh is the fiddler crab (*Uca* spp.).

Experiments have demonstrated that its burrowing behavior aerates the soil and greatly stimulates the growth of smooth cord grass. More information can be found on many of the above species in the Animals/Mammals and Reptiles sections.

Almost all of the salt marsh communities surrounding Mosquito Lagoon have been impacted by ditching and construction of impoundments for mosquito control. Efforts are presently underway to return four Volusia County impoundments to their original state. Upon completion of the project, approximately 5.25 miles of spoil dike and ditches will be leveled to marsh elevation. See Environmental Features/Pests for more on marsh restoration and mosquitoes.

There is also a limited amount of freshwater marsh in upland areas of the park. These consist of interdunal grassy swales lying between former dune ridges. Such swales can be seen along the South District beach access road east of the fee booth. Plant species include: marsh pink (*Sebatia stellaris*), cordgrass (*Spartina bakeri*), broom sedge (*Andropogon* spp.) and other species of grasses, sedges, and rushes. Some swales are being invaded by swamp willow (*Salix caroliniana*) and red maple (*Acer rubrum*) due to a prolonged absence of fire. These swales are important to several species of amphibians. Fresh water marsh is rare at CANA and should be preserved.